192. The method of claim 189, wherein at least one of said transcription and translation control signals is endogenous to said microbial cell.

193. A method for producing a microbial cell with an altered fatty acid profile comprising:

culturing a microbial cell comprising a recombinant nucleic acid with at least 50% homology to the sequence depicted in SEQ ID NO: 1, said nucleic acid operably linked to transcription and translation control signals functional in said cell, wherein a polypeptide encoded by said nucleic acid forms a monounsaturated bond between carbons 5 and 6 of a fatty acid as numbered from a carboxy terminus thereof, wherein said polypeptide is expressed in sufficient amount in said cell to alter the fatty acid profile of said cell.

194. The method of claim 193, wherein said cell is a fungal cell.

195. The method of claim 194, wherein said fungal cell is a yeast cell.

196. The method of claim 193, wherein at least one of said transcription and translation control signals is endogenous to said microbial cell.

197. The method of claim 193, wherein said nucleic acid has at least 60% homology to the sequence depicted in SEQ ID NO: 1.

198. The method of claim 193, wherein said nucleic acid has at least 80% homology to the sequence depicted in SEQ ID NO: 1.

199. The method of claim 193, wherein said nucleic acid has at least 90% homology to the sequence depicted in SEQ ID NO: 1.

200. The method of claim 193, wherein said nucleic acid has at least 95% homology to the sequence depicted in SEQ ID NO: 1.

201. A method for producing a microbial cell with an altered fatty acid profile comprising:

culturing a microbial cell comprising a recombinant nucleic acid operably linked to transcription and translation control signals functional in said cell, wherein said nucleic acid is a deletion mutant of the nucleic acid depicted in SEQ ID NO: 1, wherein a polypeptide encoded by said nucleic acid forms a monounsaturated bond between carbons 5 and 6 of a fatty acid as numbered from a carboxy terminus thereof, wherein said polypeptide is expressed in sufficient amount in said cell to alter the fatty acid profile of said cell.

202. The method of claim 201, wherein said cell is a fungal cell.

203. The method of claim 202, wherein said fungal cell is a yeast cell.

204. The method of claim 201, wherein at least one of said transcription and translation control signals is endogenous to said microbial cell.

205. A method for producing a microbial cell with an altered fatty acid profile comprising:

culturing a recombinant microbial cell comprising a polypeptide comprising the amino acid sequence depicted in SEQ ID NO:2, wherein said polypeptide is expressed in sufficient amount in said cell to alter the fatty acid profile of said cell.

206. The method of claim 205, wherein said cell is a fungal cell.

207. The method of claim 206, wherein said fungal cell is a yeast cell.

208. A method for producing a microbial cell with an altered fatty acid profile comprising:

culturing a recombinant microbial cell comprising a polypeptide with at least 60% homology to the sequence depicted in SEQ ID NO: 2, wherein said polypeptide forms a monounsaturated bond between carbons 5 and 6 of a fatty acid as numbered from a carboxy terminus thereof, wherein said polypeptide is expressed in sufficient amount in said cell to alter the fatty acid profile of said cell.

209. The method of claim 208, wherein said polypeptide has at least 80% homology to the sequence depicted in SEQ ID NO: 2.

210. The method of claim 208, wherein said polypeptide has at least 90% homology to the sequence depicted in SEQ ID NO: 2.

211. The method of claim 208, wherein said polypeptide has at least 95% homology to the sequence depicted in SEQ ID NO: 2.

212. The method of claim 208, wherein said cell is a fungal cell.

213. The method of claim 212, wherein said fungal cell is a yeast cell.

214. A method for producing a microbial cell with an altered fatty acid profile comprising:

culturing a microbial cell comprising a recombinant nucleic acid that hybridizes to the complement of the sequence depicted in SEQ ID NO: 1, said nucleic acid operably linked to

transcription and translation control signals functional in said cell, wherein a polypeptide encoded by said nucleic acid forms a monounsaturated bond between carbons 5 and 6 of a fatty acid as numbered from a carboxy terminus thereof, wherein said polypeptide is expressed in sufficient amount in said cell to alter the fatty acid profile of said cell.

215. A method for producing oil with an altered fatty acid profile comprising extracting oil from the microbial cell produced according to the method of claim 189.

216. The method of claim 215, further comprising purifying a component of said oil.

217. The method of claim 216, wherein said component is a phospholipid.

218. The method of claim 216, wherein said component is a sulfolipid.

219. The method of claim 216, wherein said component is a glycolipid.

220. The method of claim 216, wherein said component is an acylglycerol.

221. The method of claim 216, wherein said component is a monoacylglycerol.

222. The method of claim 216, wherein said component is a diacylglycerol.

223. The method of claim 216, wherein said component is a triacylglycerol.

224. The method of claim 216, wherein said component is a fatty acid.

225. A method for producing oil with an altered fatty acid profile comprising extracting oil from the microbial cell produced according to the method of claim 193.

226. The method of claim 225, further comprising purifying a component of said oil.

227. The method of claim 226, wherein said component is a phospholipid.

228. The method of claim 226, wherein said component is a sulfolipid.

229. The method of claim 226, wherein said component is a glycolipid.

230. The method of claim 226, wherein said component is an acylglycerol.

231. The method of claim 226, wherein said component is a monoacylglycerol.

232. The method of claim 226, wherein said component is a diacylglycerol.

233. The method of claim 226, wherein said component is a triacylglycerol.

234. The method of claim 226, wherein said component is a fatty acid.

235. A method for producing oil with an altered fatty acid profile comprising extracting oil from the microbial cell produced according to the method of claim 201.

236. The method of claim 235, further comprising purifying a component of said oil.

237. The method of claim 236, wherein said component is a phospholipid.

238. The method of claim 236, wherein said component is a sulfolipid.

239. The method of claim 236, wherein said component is a glycolipid.

240. The method of claim 236, wherein said component is an acylglycerol.

241. The method of claim 236, wherein said component is a monoacylglycerol.

242. The method of claim 236, wherein said component is a diacylglycerol.

243. The method of claim 236, wherein said component is a triacylglycerol.

244. The method of claim 236, wherein said component is a fatty acid.

245. A method for producing oil with an altered fatty acid profile comprising extracting oil from the microbial cell produced according to the method of claim 202.

246. The method of claim 245, further comprising purifying a component of said oil.

247. The method of claim 246, wherein said component is a phospholipid.

248. The method of claim 246, wherein said component is a sulfolipid.

249. The method of claim 246, wherein said component is a glycolipid.

250. The method of claim 246, wherein said component is an acylglycerol.

251. The method of claim 246, wherein said component is a monoacylglycerol.

252. The method of claim 246, wherein said component is a diacylglycerol.

253. The method of claim 246, wherein said component is a triacylglycerol.

254. The method of claim 246, wherein said component is a fatty acid.

255. A method for producing oil with an altered fatty acid profile comprising extracting oil from the microbial cell produced according to the method of claim 205.

256. The method of claim 255, further comprising purifying a component of said oil.

257. The method of claim 256, wherein said component is a phospholipid.

258. The method of claim 256, wherein said component is a sulfolipid.

259. The method of claim 256, wherein said component is a glycolipid.

260. The method of claim 256, wherein said component is an acylglycerol.

261. The method of claim 256, wherein said component is a monoacylglycerol.

262. The method of claim 256, wherein said component is a diacylglycerol.

263. The method of claim 256, wherein said component is a triacylglycerol.

264. The method of claim 256, wherein said component is a fatty acid.

Sub E53 265. A method for producing oil with an altered fatty acid profile comprising extracting oil from the microbial cell produced according to the method of claim 208.

266. The method of claim 265, further comprising purifying a component of said oil.

267. The method of claim 266, wherein said component is a phospholipid.

268. The method of claim 266, wherein said component is a sulfolipid.

269. The method of claim 266, wherein said component is a glycolipid.

270. The method of claim 266, wherein said component is an acylglycerol.

271. The method of claim 266, wherein said component is a monoacylglycerol.

D' Cont. 272. The method of claim 266, wherein said component is a diacylglycerol.

273. The method of claim 266, wherein said component is a triacylglycerol.

274. The method of claim 266, wherein said component is a fatty acid.

Sub E54 275. A method for producing oil with an altered fatty acid profile comprising extracting oil from the microbial cell produced according to the method of claim 214.

276. The method of claim 275, further comprising purifying a component of said oil.

277. The method of claim 276, wherein said component is a phospholipid.

278. The method of claim 276, wherein said component is a sulfolipid.